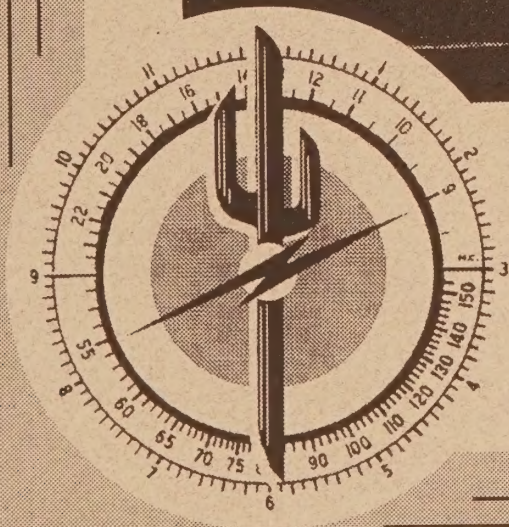


ARIZONA ANTIQUE RADIO CLUB NEWS



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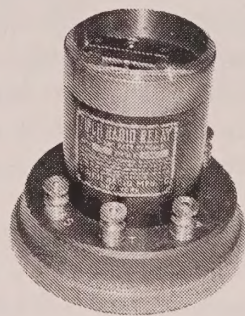
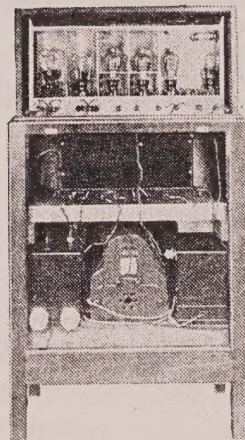
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*Dr. James Robinson with his
Stenode Radiostat*



ARIZONA ANTIQUE RADIO CLUB NEWS

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Arizona Antique Radio Club

The Arizona Antique Radio Club was organized in 1983 for the preservation of the history and artifacts of radio and television, and for the advancement of knowledge and appreciation of radio technology and communication. The Club is a non-profit corporation organized primarily for the mutual assistance of radio devotees and collectors in Arizona. Membership, however, is open to any persons who have an interest in radio and television history, preservation, restoration, and collecting.

Meetings are held from September through May and consist of touring collections, presentations of technical, historical or restoration information, thematic displays of radios and the autobiographical experiences of the members. Our antique radio Swap Meets are usually scheduled for the March and November meetings. Members of the Board of Directors are elected at the annual business meeting in May. Most meetings are held on weekends in the Phoenix area, and when possible, elsewhere within Arizona.

Membership dues are \$18 (individual) or \$20 (family) per calendar year and provide access to all club benefits including the quarterly issues of the *Radio Club News*. Send dues or membership inquiries to: **Arizona Antique Radio Club, 10513 E. Clinton, Scottsdale, AZ, 85259, phone (602) 860-8951.**

The Arizona Antique Radio Club News is the quarterly publication of the Arizona Antique Radio Club, Inc. It is mailed First Class to current members at the beginning of March, June, September and December.

Contributions: submission of articles, news items, fiction, photographs and other materials relating to radio history and collecting are greatly appreciated, particularly if they have an Arizona connection. All members are encouraged to broaden their interest in the hobby by sharing their experiences, opinions, knowledge and observations with the club through its publication. Send materials for publication to **Arizona Antique Radio Club, 2025 E. LaJolla Dr., Tempe, Arizona, 85282-5910. Phone is (602) 730-6058.** Fax available on request.

Advertising: classified ads of reasonable length are free to members. Display advertising is also available, contact editor for current rates. Deadlines are the 10th of the month before publication. The club accepts no responsibility for transactions made in regards to published ads.

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 Harry Hyder
 P. A. Kinzie
 Con Morton
 Andy Ooms

Editor: Bill Lettow

It'll be a long, hot summer so don't miss our last meeting
until next fall...

May /Annual Business Meeting
featuring guest speaker

Lew McCoy
W1ICP

Having recently moved to Mesa, Lew is a well known writer and columnist on ham radio and antenna topics. He has held posts at the ARRL for 30 years and has recently retired as Technical Editor there. He has written for *QST* and *Electric Radio* and has authored practical books on antennas.

Lew is a popular speaker at radio events nationwide. This will be an enjoyable and informative meeting you won't want to miss !

We'll also have our Annual Business Meeting and will be electing new members of the Board of Directors. This year the Board terms of Bill Lettow, Rick Mountjoy and Steve Smith will be expiring. If you are interested in serving on the Board, or would like to nominate someone else, please contact any current Board members as soon as possible. (Names and numbers are on page 2.)

Saturday, May 15, 1pm

Villa de Fuente Clubhouse, 5512 N. 71st Place, Scottsdale.
(Just off Scottsdale Road on the west side of the street, one
block north of Jackrabbit.)

The Stenode Radiostat

The Stenode Radiostat was the name given to a receiver that had been designed in England by Dr. James Robinson and was introduced to this country in 1930. The Stenode seemed to operate on principles somewhat different from conventional receivers of that time.

An amplitude modulated transmitter broadcasting audio frequencies up to 5 kHz occupies a spectrum space of 10 kHz for its carrier and upper and lower sidebands. This, of course, puts a limit on how closely stations can be spaced without interfering with each other.

A conventional AM receiver has a bandwidth of 10 kHz, which permits all of these 5 kHz sidebands to be received and reproduced.

Dr. Robinson's Stenode receiver took a radically different approach.

The bandwidth of the Stenode was about 1 kHz, far below what was considered necessary for reception of 5 kHz audio tones. Dr. Robinson did not deny the existence of sidebands, but pointed out that another way of looking at an AM modulated signal was to consider it a wave of constant frequency whose amplitude was varying up and down in accordance with the audio modulation. This, of course is a valid approach. It is a fact that at that time some engineers were a little unhappy with sideband theory and wondered whether sidebands had a physical reality, or were they, as Sir John Ambrose Fleming remarked, "mathematical fictions"?

Dr. Robinson pointed out that these amplitude variations of the carrier were present even outside the narrow bandwidth of the receiver and could

by Harry Hyder

be detected normally. He did realize, however, that a narrow band filter has the effect of ironing out rapid amplitude variations of a signal. Thus the output of a detector would decrease as the frequency of the audio modulating signal increased. To compensate for this the Stenode's audio amplifier was designed to have amplification that increased as the audio frequency increased.

The Stenode was a superheterodyne. It obtained its very narrow bandwidth by means of a piezo-electric quartz crystal in the intermediate frequency amplifier. Fig. 1 shows the crystal, sealed in glass. The crystal was arranged in a bridge circuit, which canceled the capacitance of the metal electrodes holding the crystal. This is shown in figure 2. The audio amplifier had a special interstage transformer to provide the rising amplification versus frequency that was required.

The stated advantage of the Stenode system was that broadcast stations could be much more closely spaced than the 10 kHz required by conventional sets. This would permit many more stations to occupy the broadcast band without interfer-

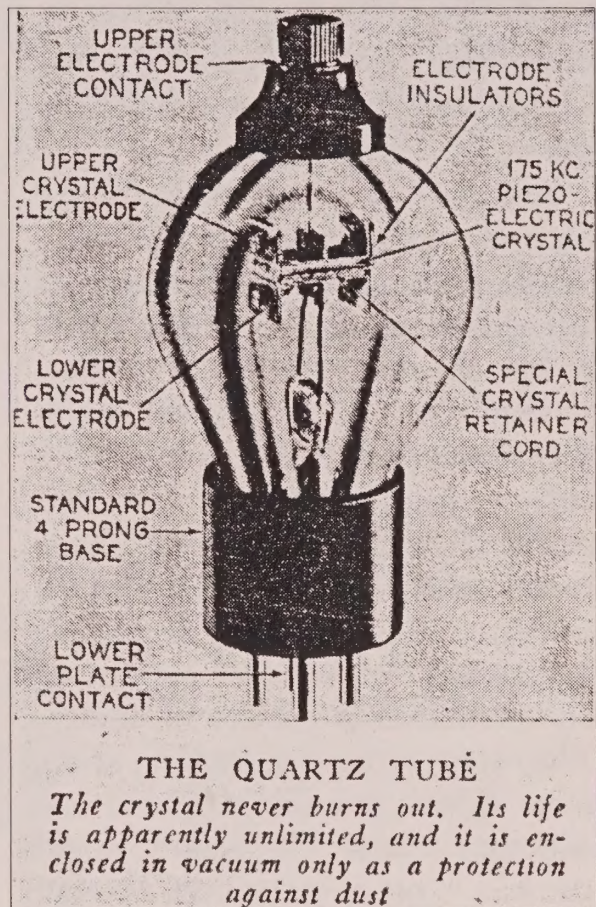
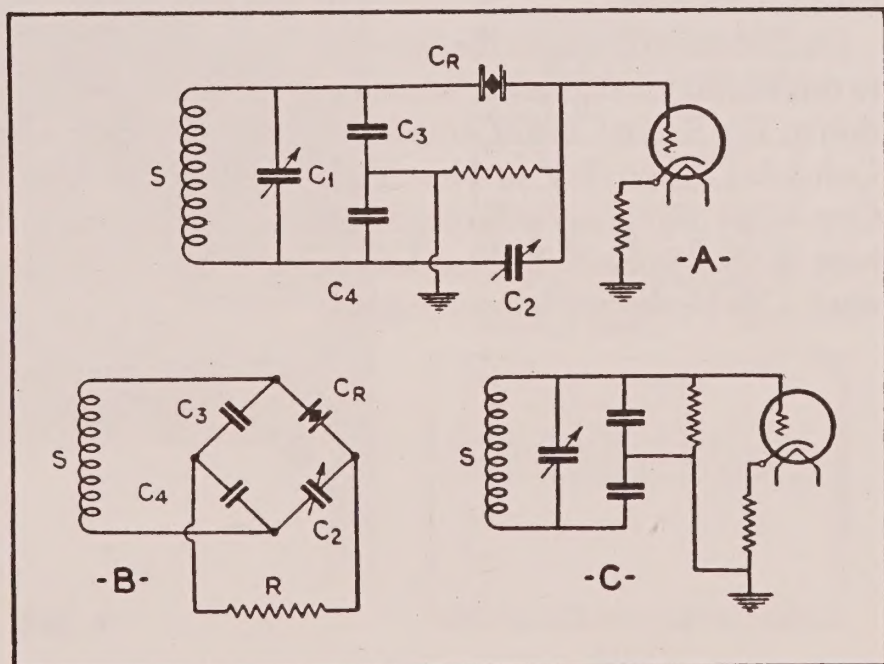


FIG. 1

FIG. 2



ence. Because of the very narrow bandwidth of the Stenode, the carrier of an interfering station only a few kHz away could not beat with the carrier of the desired station.

Some of the claims made for the Stenode seem somewhat dubious. While at the peak of the selectivity curve the bandwidth might be 1 kHz or less, the skirts of the curve widen, so that even 5 kHz from the center there is appreciable response. The curve in fig. 3 shows this. The claim that the Stenode detects the amplitude variations of the carrier rather than the sidebands cannot be true. Amplitude variations and sidebands are not an either/or matter subject to choice. They are two ways of looking at the same thing; you can not have one without the other. The Stenode would also be a rather noisy receiver. The fact that the higher frequency audio sidebands are reduced in amplitude by the high selectivity and the audio amplification increased to compensate for this must inevitably degrade the signal-to-noise ratio.

Dr. Robinson brought the Stenode to this country and gave a demonstration to The Radio Club of America at Columbia University in New York City. Many prominent radio engineers were in the audience. The moderator was L.C.F. Horle, well known consult-

ing radio engineer. He later gave his impressions of the Stenode. He said that the quality of reproduction was less than fair. Also, the interference rejecting qualities of the Stenode were not adequately demonstrated because the levels and frequencies of the interfering signals were not specified.

Fig. 4 shows the rear view of Robinson's Stenode receiver.

The British Radiostat Co. Ltd. was set up to manufacture the Stenode in England. I do not know if any were actually made or sold. To the best of my knowledge, no Stenodes were manufactured in this country.

In 1932, *Radio News* magazine ran a three part series telling how to construct a Stenode, which they called "a modern crystal receiver". The quartz crystal was sold by the Stenode Corporation of America. Fig. 5 shows their ad. The crystal resonated at 175 kHz, a common superheterodyne intermediate frequency at that time.

Interest in the Stenode died out rapidly, and soon nothing more was heard of it. However, crystal filters soon became common in communications receivers intended for receiving code signals, which are very narrow band.

Books dealing with the design of radio receivers make no mention of the Stenode, not even as a footnote.



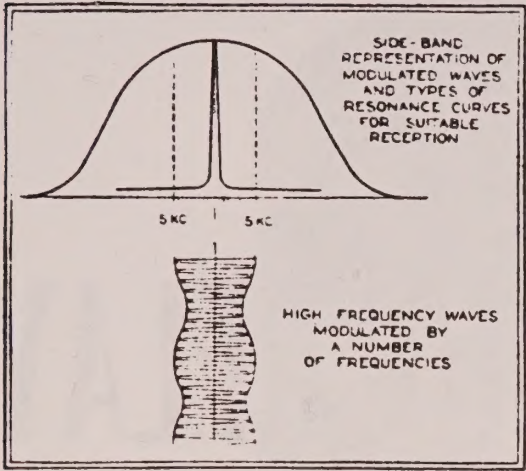


FIG. 3

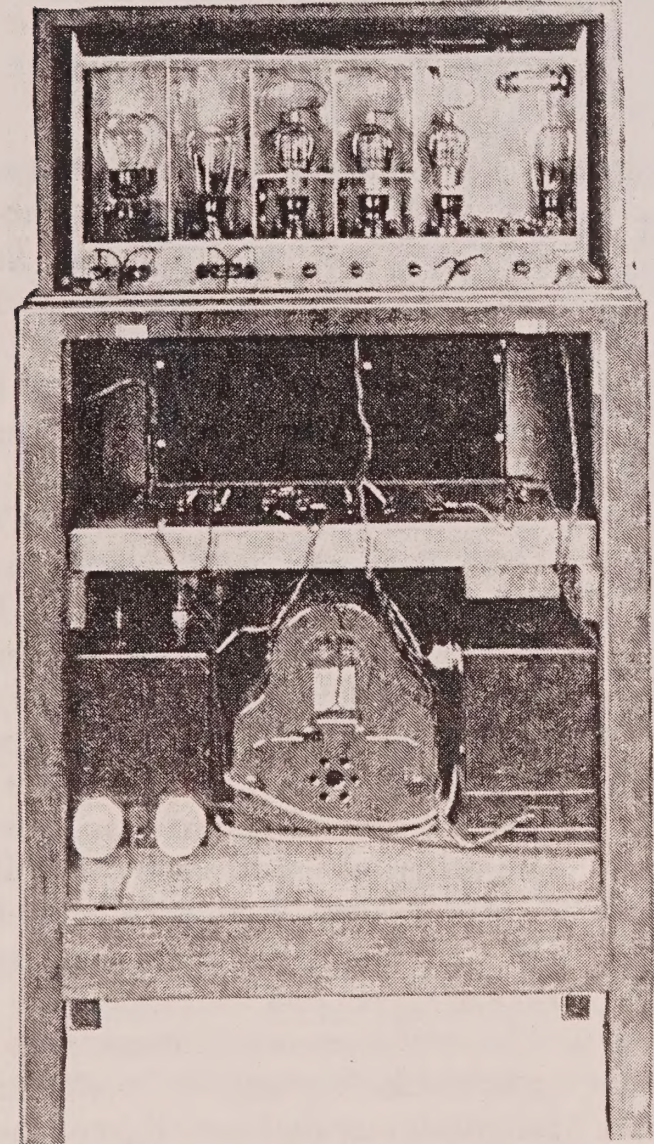
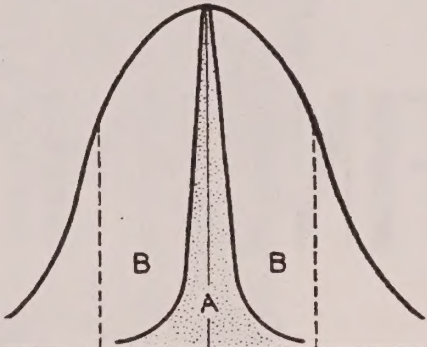


FIG. 4

Data, Parts List and Blue Prints

Complete Schematic Diagrams and Construction Details for building:



Inner curve shows Stenode's selectivity, outer curve that of ordinary receiver. Lines BB are 5 k. c. distant from Line A. All background noise included in the light portion between A and BB is eliminated by the Stenode.

THE STENODE CIRCUIT

Developed under the patents of James A. Robinson, M.B.E., D.Sc., Ph.D., M.I.E.E., F. Inst. P., and former Chief of Wireless Research, British Royal Air Force, by the engineers of the Stenode Corporation of America.

Price \$10.00

Several reliable American manufacturers are now making all parts meeting Dr. Robinson's specifications for the Stenode circuit. The special quartz crystals—in tube form for convenient handling and mounting—are obtainable from us until the American Tube Manufacturers licensed by us are in sufficient production to supply the demand.

The Stenode Corporation of America now throws open to serious investigators the study of this revolutionary circuit, which is the greatest single advance since Morse invented the telegraph.

"If it isn't a STENODE it isn't a modern receiver."

STENODE CORP. OF AMERICA

(Formerly American Radiostat Corp.)
Hempstead Gardens, L. I., N. Y.

STENODE CORP. OF AMERICA
Hempstead Gardens, L. I., N. Y.

Enclosed find ☐ Personal Check, ☐ P. O. or ☐ Express Money Order for \$10.00 for which please send me complete diagrams, details and list of Parts for constructing the Stenode Circuit.

Name

Street

City State

FIG. 5

What is it ?

FINCH RADIO RELAY

Story by Paula & Bob Bakinowski

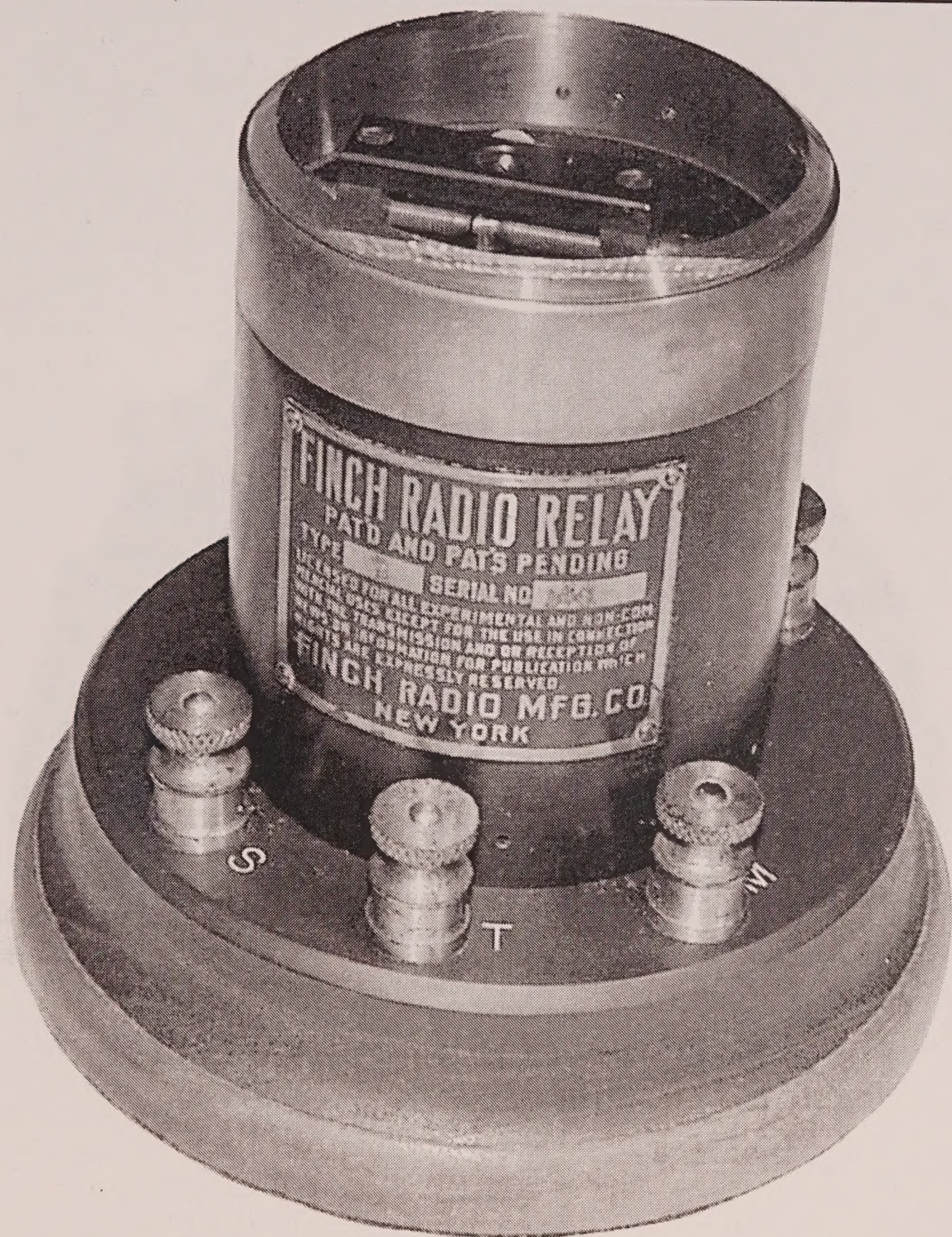
Photos by Bill Lettow

Paula and I are collector "junkies". We collect "stuff". Among other things I collect are radios of the 20s and early 30s, telephones, communications receivers with heavy emphasis on military "boat anchors" and cars, just to mention a few. Paula collects "nodders" or "bobbin head" figures, Oriental dolls, pigs and flamingos. And that's not all!

Each month through the year, we try to plan a trip to the greater Phoenix area. We like to attend the antique fairs, hamfests, radio shows and the like. After these events we have the rest of the day to go what we call "junkin". Junkin is nothing more than hitting all the antique malls that we can in what time we have left. Our favorite place is Glendale. However we do venture through Phoenix, Scottsdale, and often make our way to Apache Junction. Traveling in this direction gives us the opportunity to return to Tucson via the "scenic" route.

Some time ago, we found ourselves at the "Old Hotel" in Apache Junction. In one of the back, dimly lit cubby holes on a far shelf, I spotted my treasure: a FINCH RADIO RELAY. "Wow!", I said, "this is cool." I turned to Paula and said, "look what I found." She replied "that's cute... what is it?" I said "a FINCH RADIO RELAY." She said "I know that, I can read too. But what is it used for?" I replied, "hell if I know!". She further said, "if you don't know what it really is and what it is used for than why get all excited?" Well, I said to myself, good question. I replied that it reminded me of my Chicago oak wall crank telephone. It too has a beveled glass "peek-a-boo" window. Looking back at me she said "that's nice."

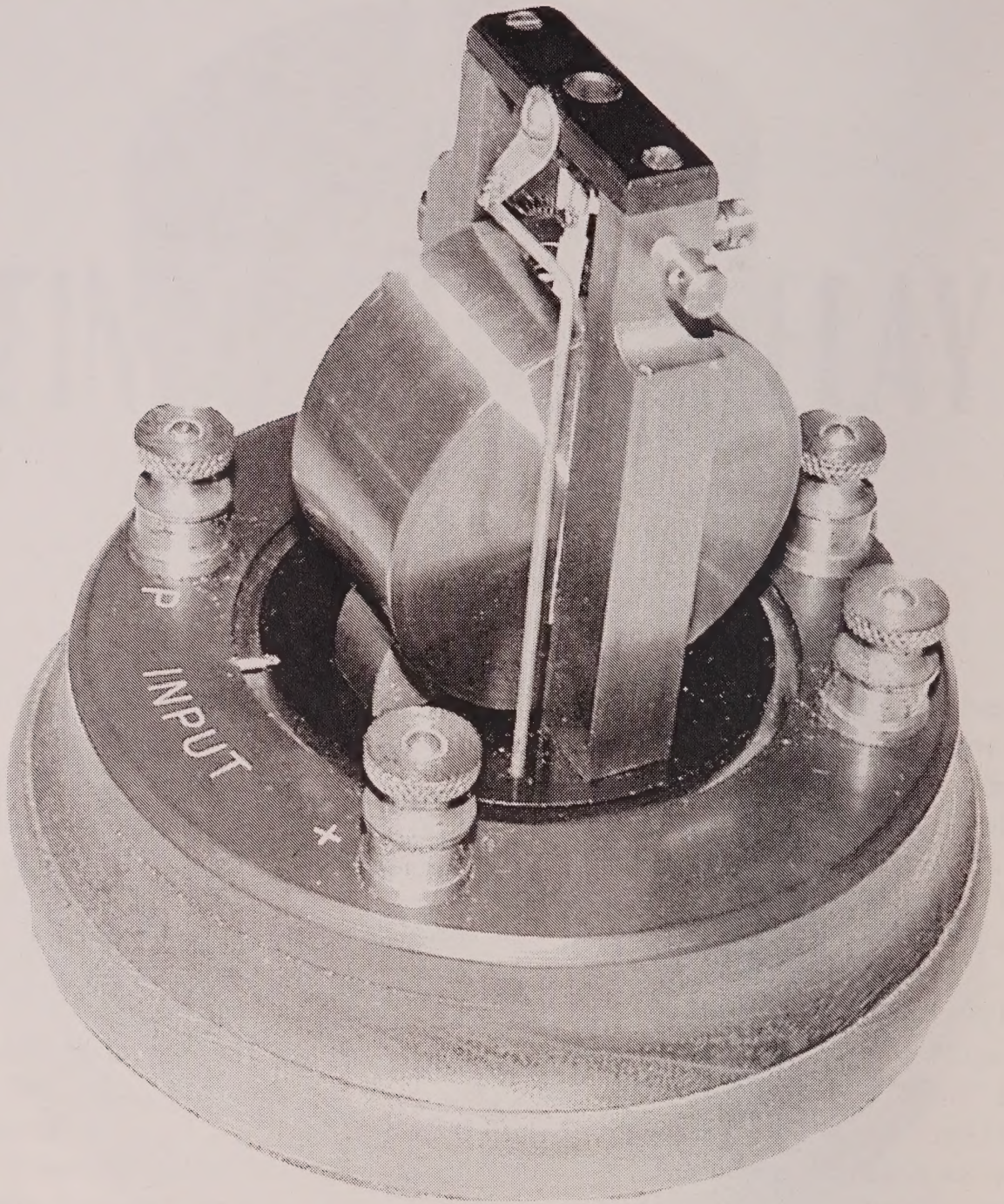
So, with treasure in hand, I approached the front counter hoping the proprietor may shed some light on the subject. I was not surprised, they had not a clue. So I asked "how do you



FINCH RADIO RELAY
PAT'D AND PAT'S PENDING
TYPE B SERIAL NO. 113

LICENSED FOR ALL EXPERIMENTAL AND NON-COMMERCIAL USES EXCEPT
FOR THE USE IN CONNECTION WITH THE TRANSMISSION AND OR RECEPTION
OF NEWS OR INFORMATION FOR PUBLICATION WHICH RIGHTS ARE

EXPRESSLY RESERVED
FINCH RADIO MFG. CO
NEW YORK

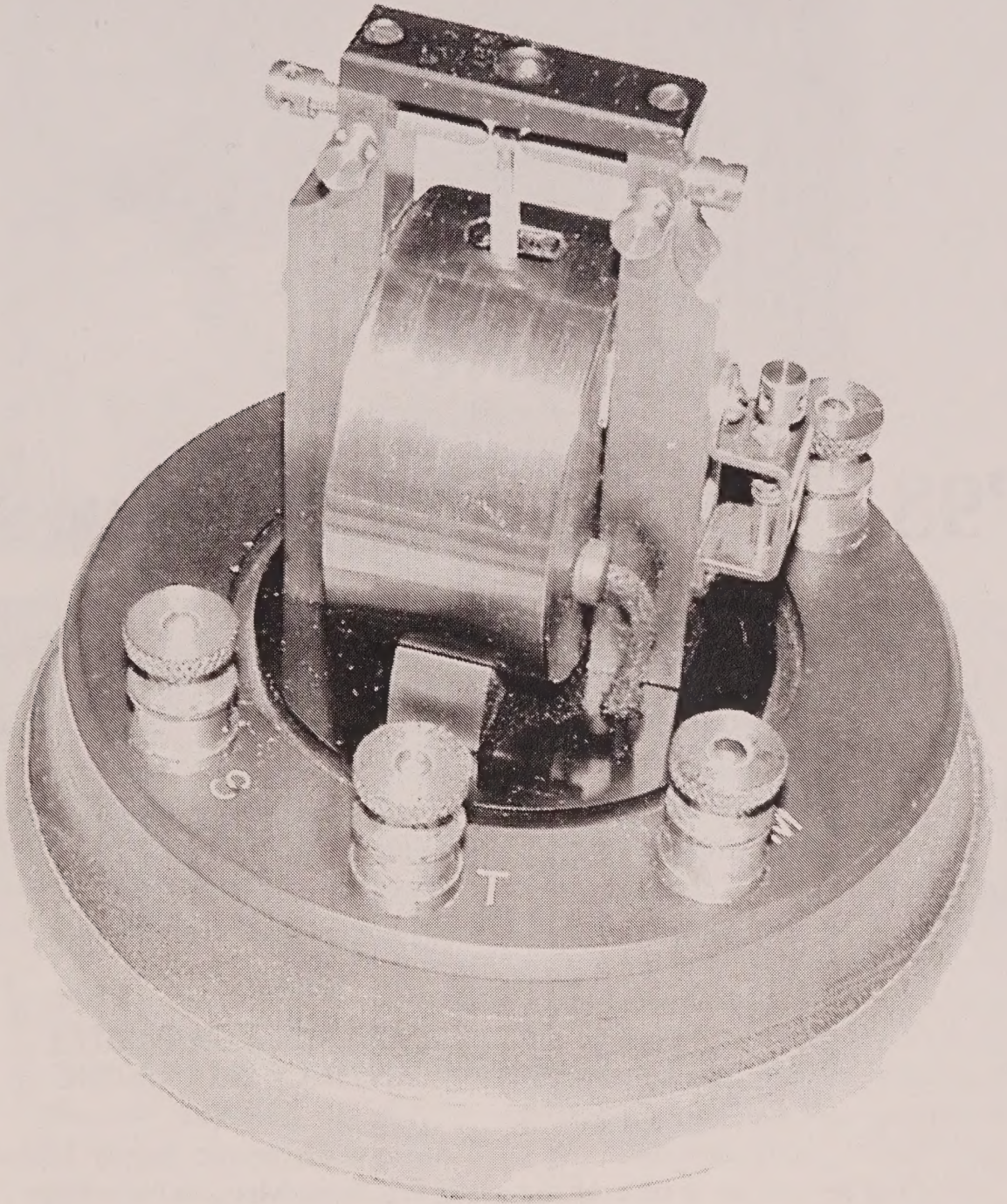


establish the \$60.00 price, based on what?" (I did expect this answer). Their reply (which I have heard many, many times) was "That's very old and quite rare too." So, I thought yeah, right! I checked my money pocket to see what I had left to spend. Since this was the end of our "junkin" spree for today, I found that I could not meet

the asking price. So, I made them an offer of \$50. They accepted.

The following description and photos depict the FINCH RADIO RELAY.

The relay stands 5 1/2 inches tall. It's mounted on a mahogany base 5 3/4 inches in diameter. The removable bakelite cylinder is 3 1/2 inches



tall by 3 inches in diameter. The internal relay is a SPDT. The coil terminals are marked "+" and "P" and have an internal dc resistance of 685 ohms. The relay wiper terminal is marked "T". The NC terminal is marked "M" while the NO terminal is marked "S".

The FINCH RADIO RELAY now sits proudly among all the other stuff. But wait., I still don't know what the hell this gismo really is. I blew \$50 bucks for what???

Now this brings us up to date. Perhaps you, the reader, can shed some light on the subject. ☎



A.A.R.C. NEWS

'98 ~'99 Meeting Reviews

OCTOBER MEETING SCOTTSDALE TELEVISION LABS

Our 1998-1999 season began on October 3 when Ted Hartson hosted a meeting at his "dream factory", Scottsdale Television Labs. Ted gave a short talk on FM pioneer E. H. Armstrong whose career of innovation and invention was punctuated by legal battles and personal tragedy. Ted has been a long time admirer of Armstrong and has been collecting items relating to the inventor.

We then set out on a tour of the facility. The lab is at work perfecting a method of squeezing several channels of high quality TV signal into a small slice of bandwidth in existing TV broadcast signals. To this end the place is stuffed with equipment of all kinds, computers, TVs, test and broadcast equipment and miles of cable running all over the place. One room featured a complete TV broadcast transmitter, bought from a sta-

tion in Tucson, which was in the process of being hooked up. It was interesting to see vintage equipment scattered among the latest high-tech stuff. It seems there are certain things the old units can do better.

We wish to thank Ted for having us and we wish him all the best on his exciting, and risky, venture.

NOVEMBER SWAP MEET ANTIQUE ELECTRONIC SUPPLY

Antique Electronic Supply hosted our Fall Swap Meet on November 7. The cars were parked all up and down the block and at 8 o'clock the floodgates opened. One of the biggest crowds we've ever had began 3 hours of antique radio power shopping. A highlight of the meet: the return of Martin Bergan, who moved back to Phoenix from Florida. His house here had not been sold so he and the collection moved back in. Welcome home, Martin.

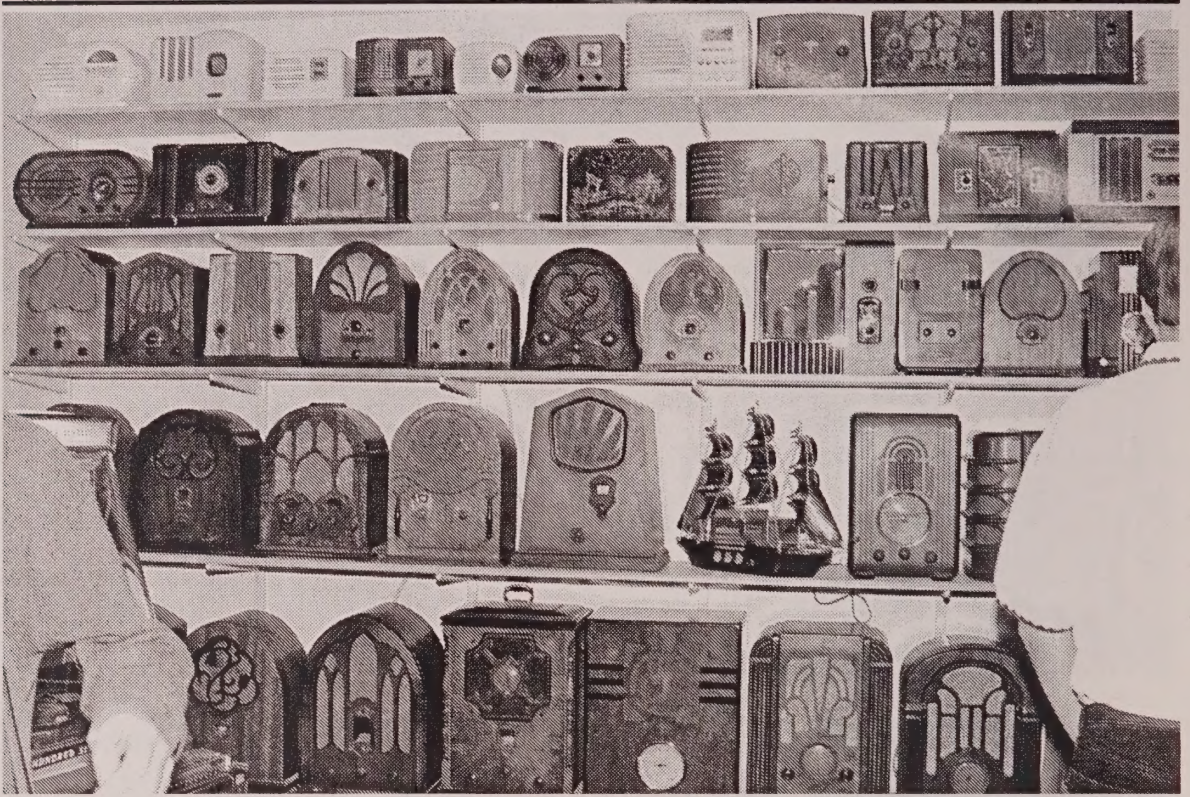


Mark Toppo gave us a quick run down on the latest in cabinet restoration. Below are a few of the products Mark recommends. Promotional fee was NOT paid!

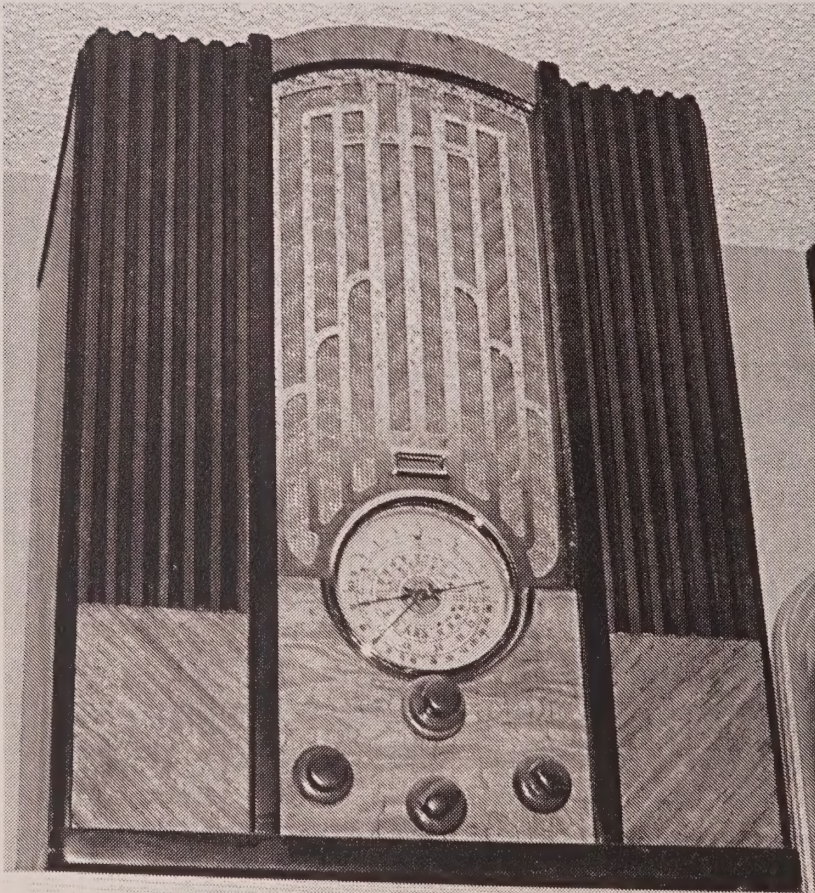
DECEMBER MEETING MARK TOPPO'S COLLECTION

Mark Toppo's Glendale home was the site of our December 5th meeting. Mark started off with a talk on

cabinet restoration and some new products available to make the job easier. A question and answer period followed and then we headed indoors to see Mark's radios.



Unusual cabinetry is the main theme of Mark's collection.

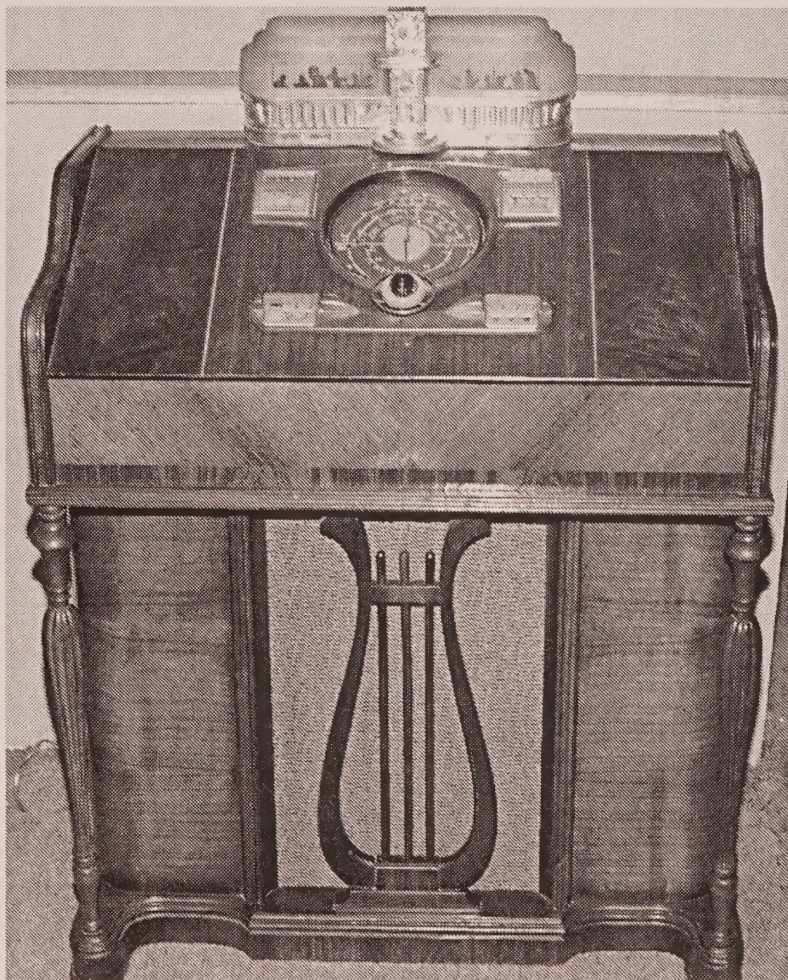


Left and Right: a couple of rare and highly desirable Zeniths. At left is a 1935 Model 835 which Mark virtually rebuilt from the bad condition he found it in. At right is a 1941 model which looks like a small piano, found in nearly perfect condition.



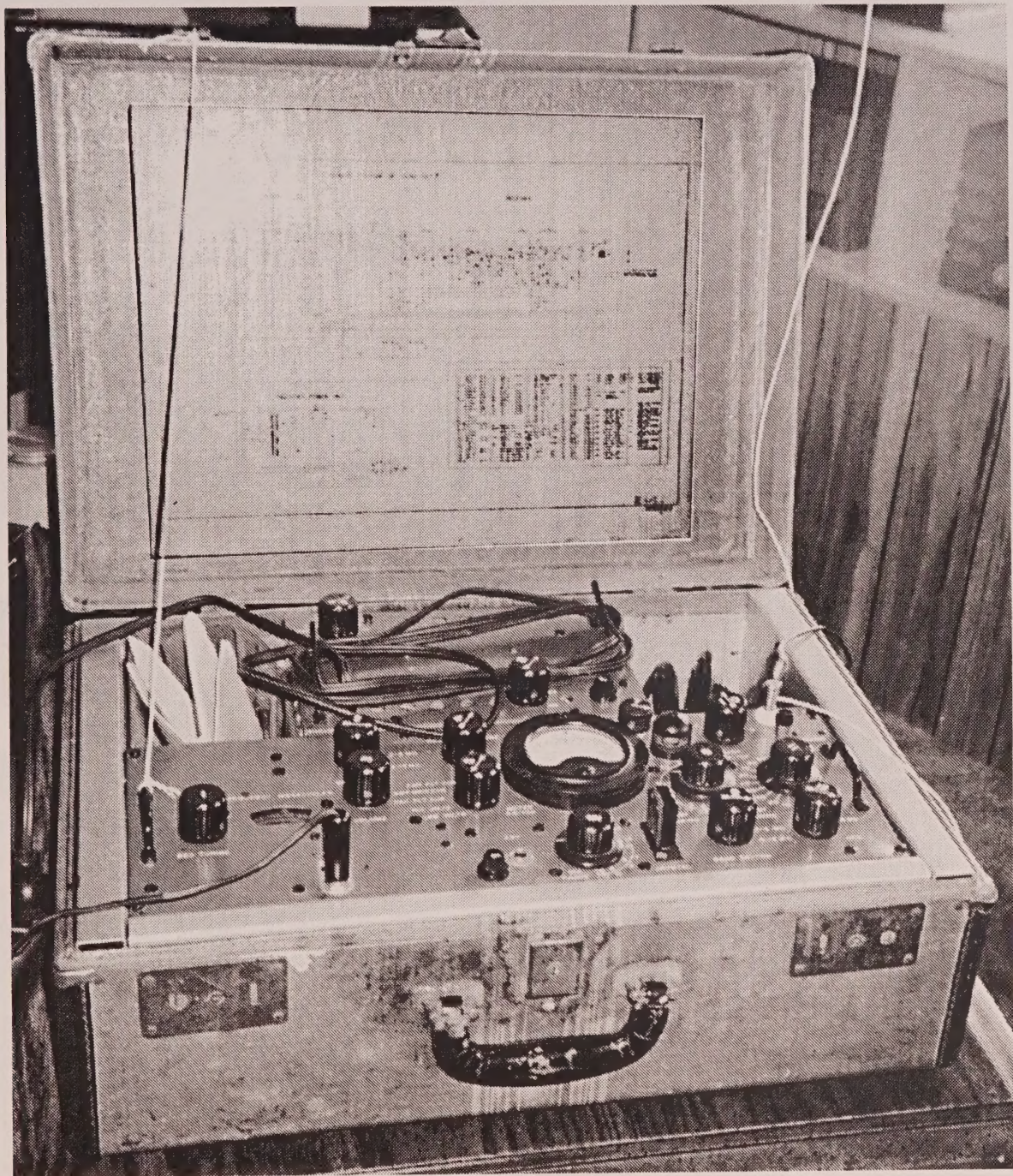
Debbie Krol was there picking out her next radio.

Envy was rampant as we viewed Mark's dazzling collection of unique and unusual radios. Mark's dedication to antique radio collecting was evident in the many restorations he has completed of sets that most of us would have not attempted at all. The collection is also notable for the many examples of beautiful and uncommon woodwork - from an ornate Sparton console to the endless variations of the small "California" cathe-





More views of the Toppo Collection. Many of Mark's radios have won awards here and at competitions elsewhere. It would be interesting to see the same views above as "before" pictures because many of Mark's sets came to him in very bad condition and in fixing up these sets, he has stretched the limits of what can be called "restorable".



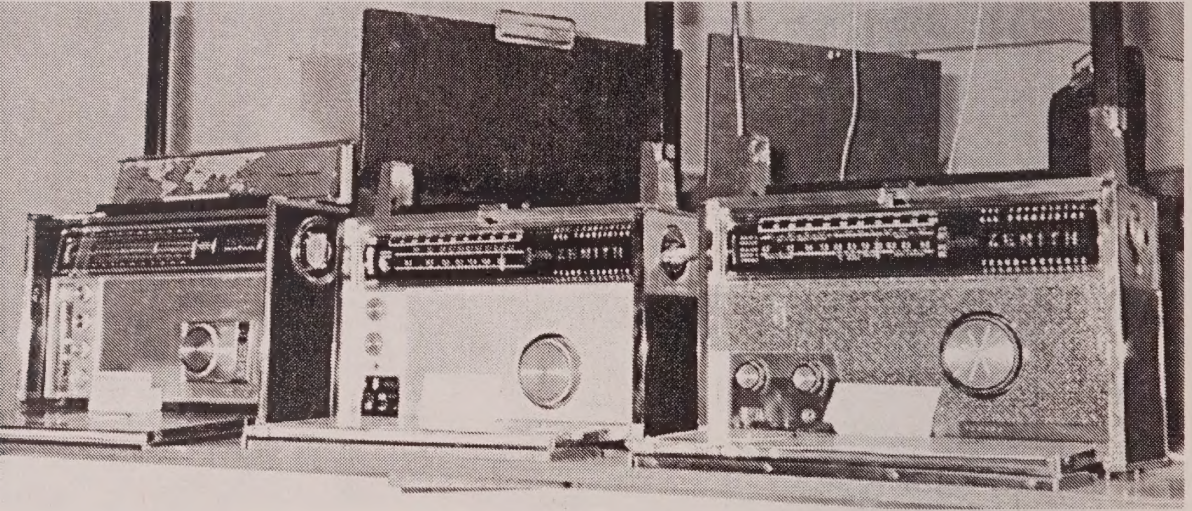
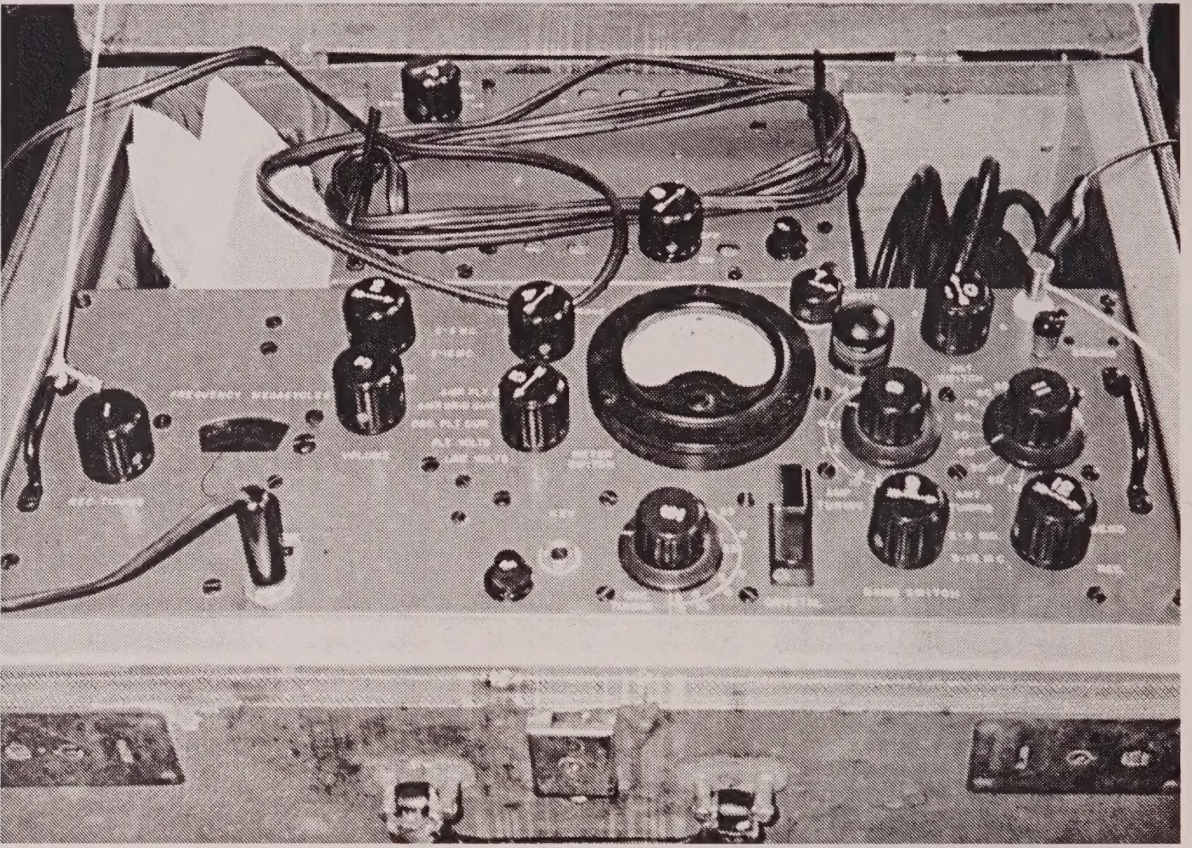
Dick Stout's working spy radio. Although now tuned to receive harmless music, it may have at one time been used to transmit and receive coded, top secret messages from world hot spots teetering on the brink of war.

drals. There were many outstanding and notable items far too numerous to list here.

JANUARY MEETING **DICK STOUT'S HOUSE**

We met on January 9th, 1999 at

Dick Stout's home in Sun City. Dick had acquired many new items since we met there last year and one standout was a working, pre-WWII spy radio disguised as a suitcase. The fact that such a radio has survived is amazing because they were usually



Top: closeup of the spy radio. Above: a few of Dick's Zenith portables, which have recently become very hot collectables.

dumped or abandoned after they had completed their mission. Instead of becoming a museum piece in Dick's collection, this radio might have been tossed off a wet bridge in Germany during the dead of night.

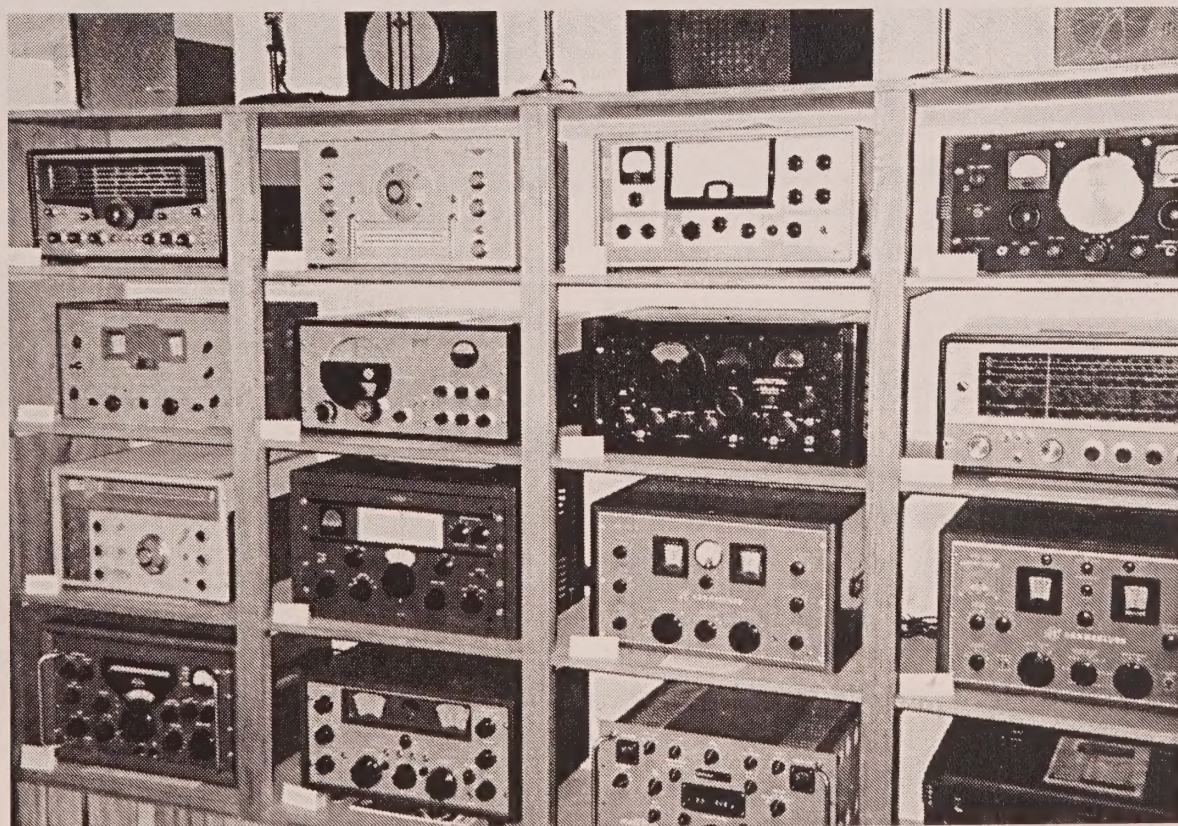
After viewing the many communications receivers and 50s and 60s vin-

tage high-end portables on display in several rooms of Dick's house, club members gathered in Dick's workshop where Dick conducted a seminar on troubleshooting power supplies and the testing and evaluation of capacitors.

Continued on Page 20



Dick with his working Webster-Chicago wire recorder.
Below a few of his many communications sets.





Larry Kenan's display of 1935 radios and books.

FEBRUARY MEETING **RADIO ROUNDUP** **THEME: 1935**

Our theme this time around was the year 1935 and club members managed to fill our usual room at the Los Olivos Senior Center with plenty of examples from that year. 1935 was a transitional year when much of the country was still mired in depression, but with various New Deal programs starting to have their desired effect. Metal tubes were introduced. A few very large and expensive radios were offered by Zenith, Midwest, Scott and others, while other brands developed cheaper manufacturing techniques in order to appeal to the growing lower end of the market.

Just as radio was bringing news, music, drama and religious program-

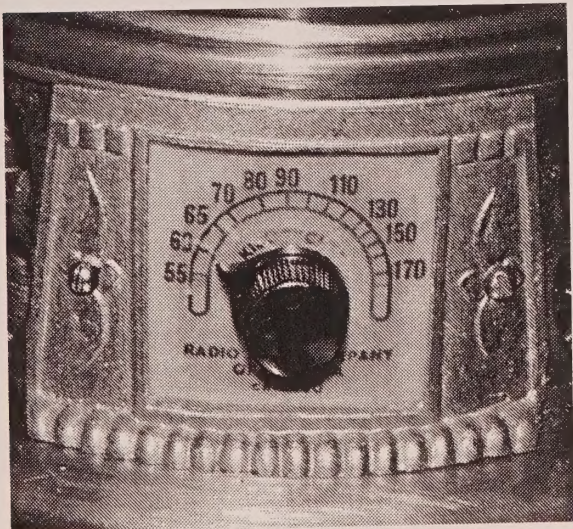
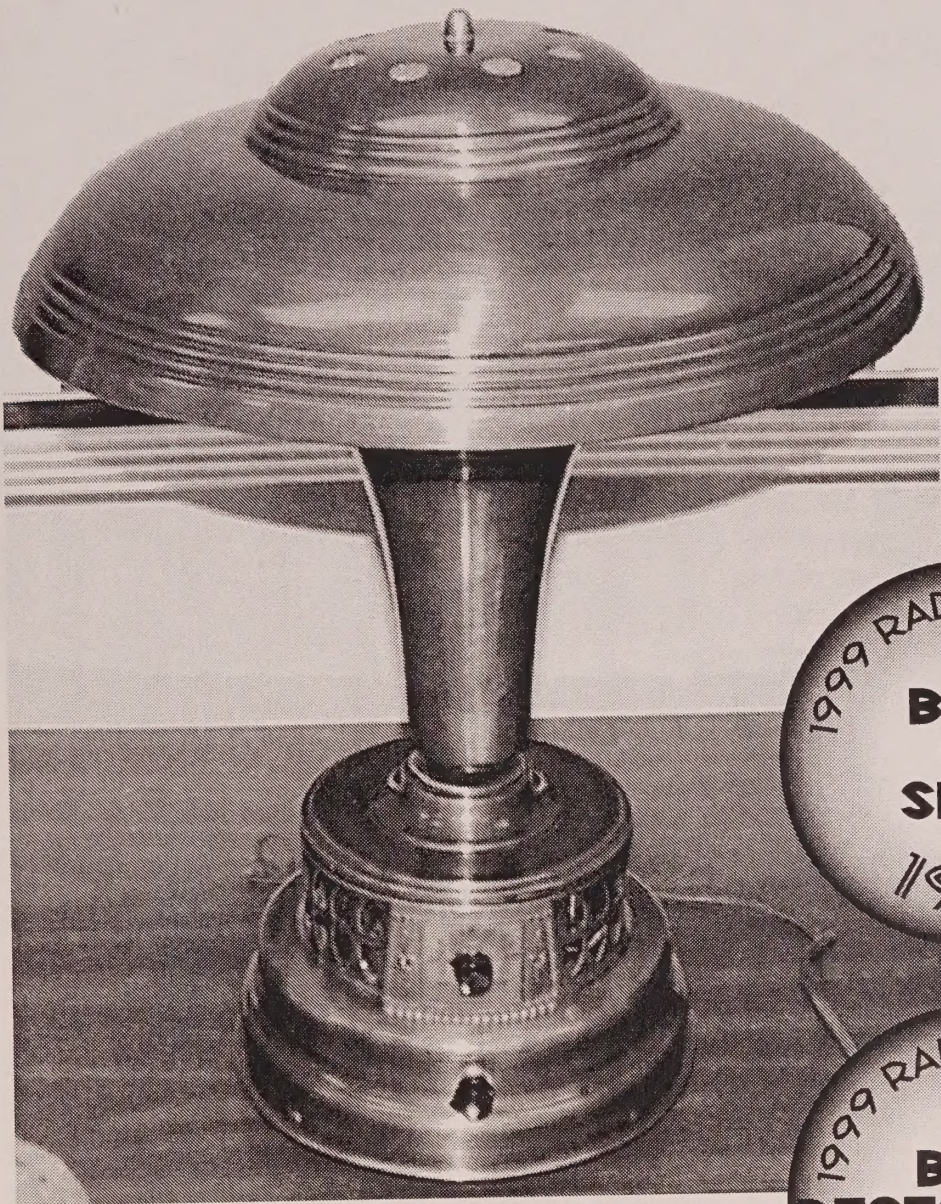
ming to a growing national audience, the year was also marked by the growth of radio as a tool to promote hate and intolerance - both in the fascist nations of Europe and here at home.

The Radio Roundup display covered 3 walls of the room. After Dave Lambert and Bill Lettow presented some historical highlights of the year we had our show-and-tell and then voted on the awards.

MARCH SWAP MEET **DAVE'S ANTIQUES, TUCSON**

Each year our Tucson swap meet gets larger and this year it took a big jump when buyers and sellers needed two sections of the parking lot at Dave's Antiques to display their wares.

Continued on Page 28



Winner of two awards, Best of Show and Best Restoration, was Bob Grinder for his Radio Lamp Company of America radio lamp. Bob worked for years to obtain the radio and then restored this rare, all-metal radio lamp from a rusted hulk.

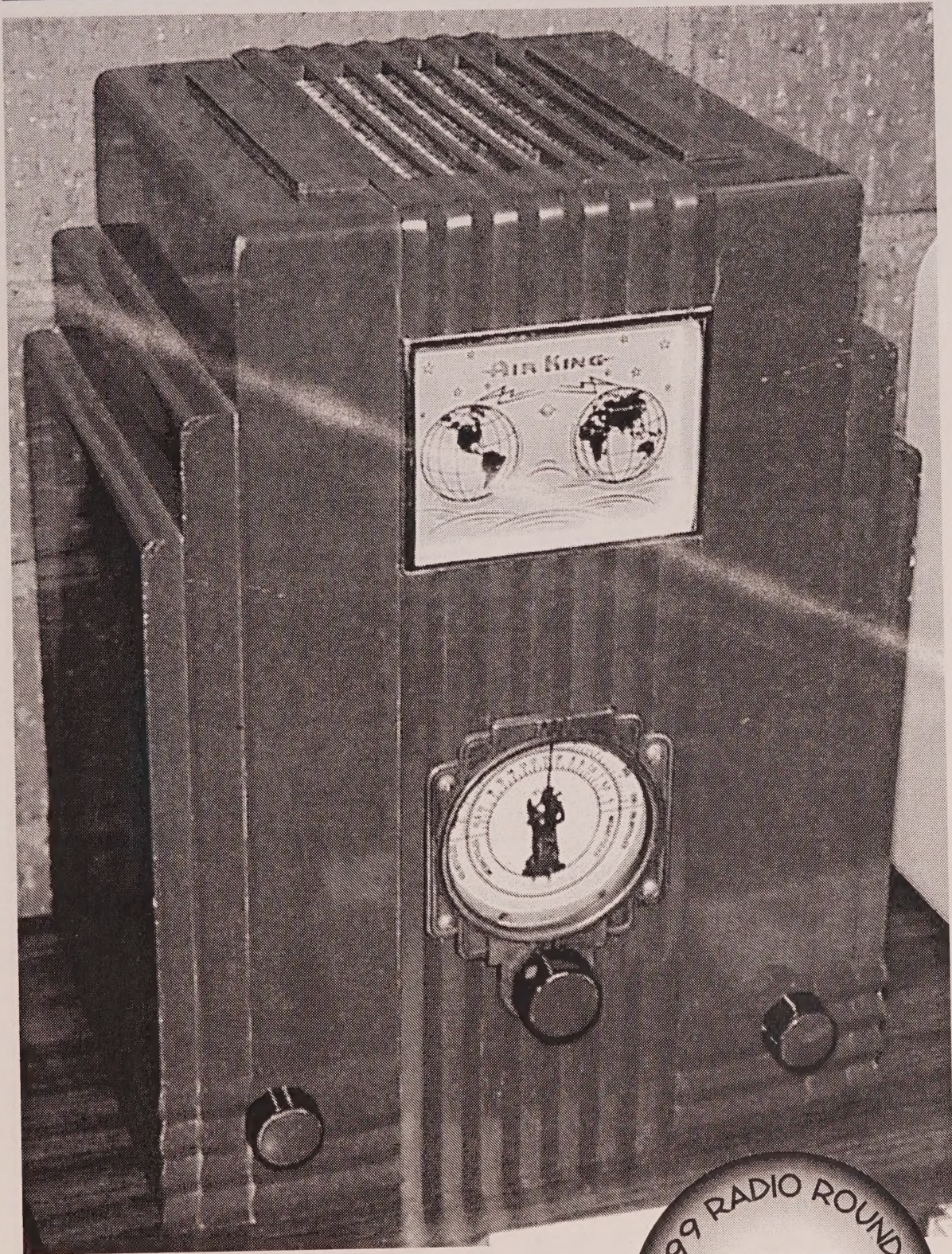


Best Story went to Harry Hyder for this radio he built in the 1980s. He set out to build a receiver just as he would have in 1935, using 1935 plans and parts. He then wrote an article about it which appeared in *QST*.



This collection of metal tubes, which includes a rare early tube with etched (not painted) numbers on it won Best Related Item for Dennis Craft.





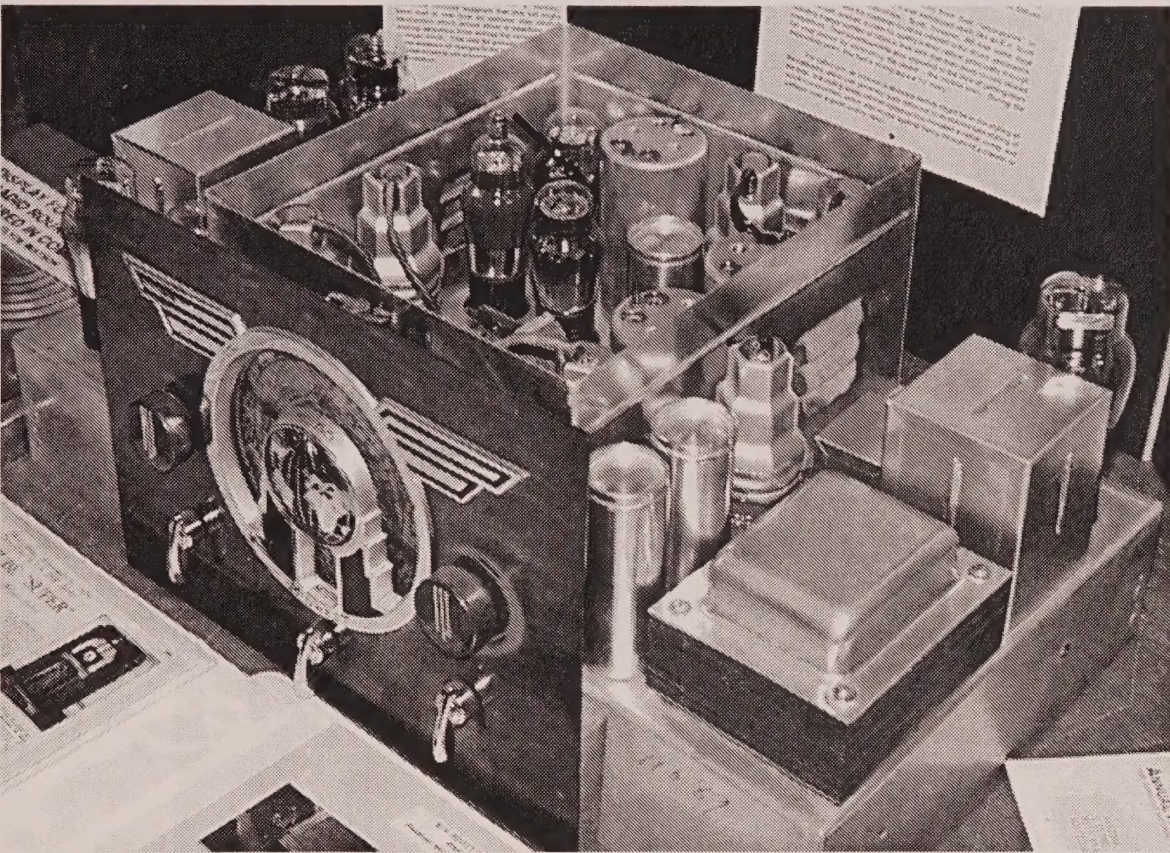
Martin Bergen's red Air King "Skyscraper" won the award for Best Original Condition. With only a few minor marks on it this radio is breathtaking.

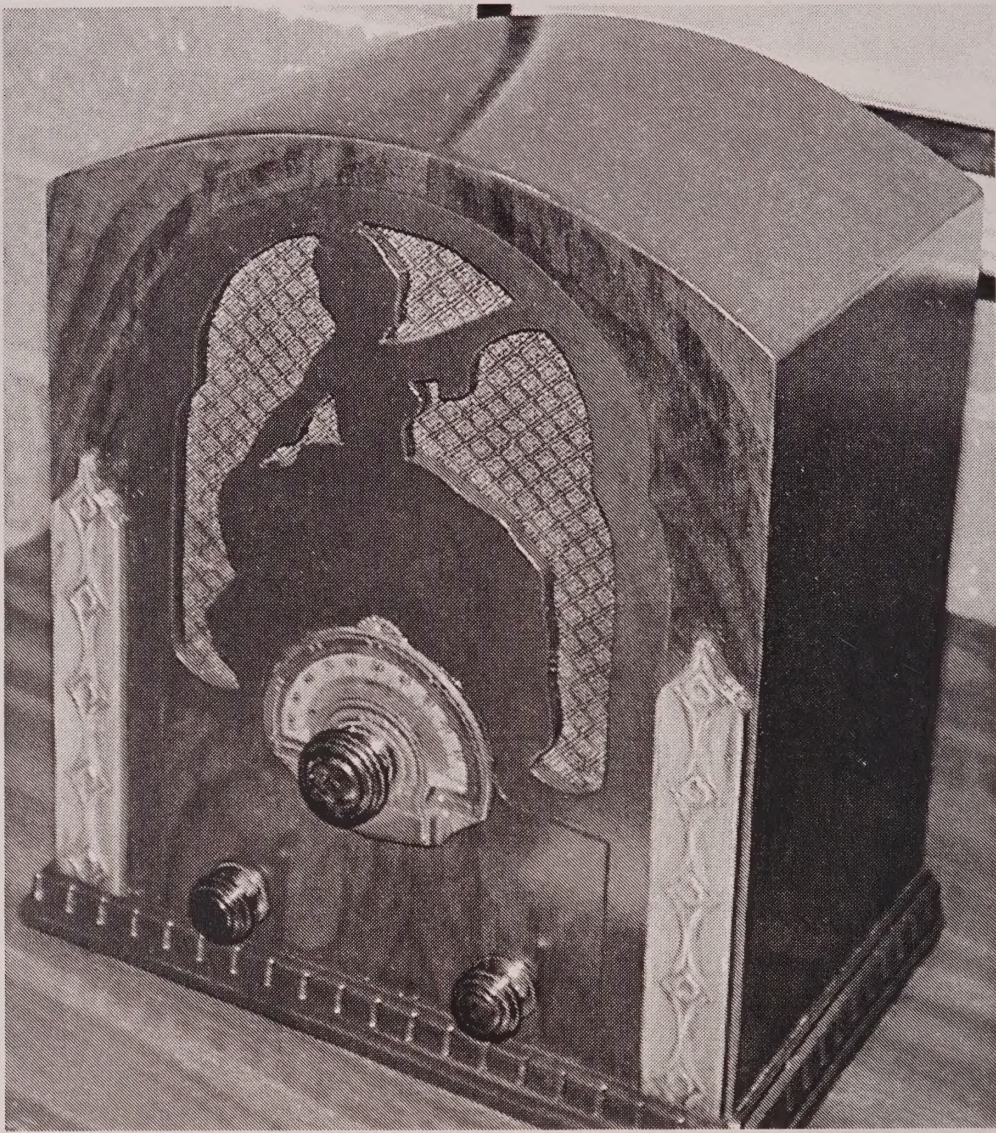




Dave Lambert and Dennis Craft set up this display of Atwater-Kent and Philco radios with price tags just as they would be shown in a 1935 radio showroom.

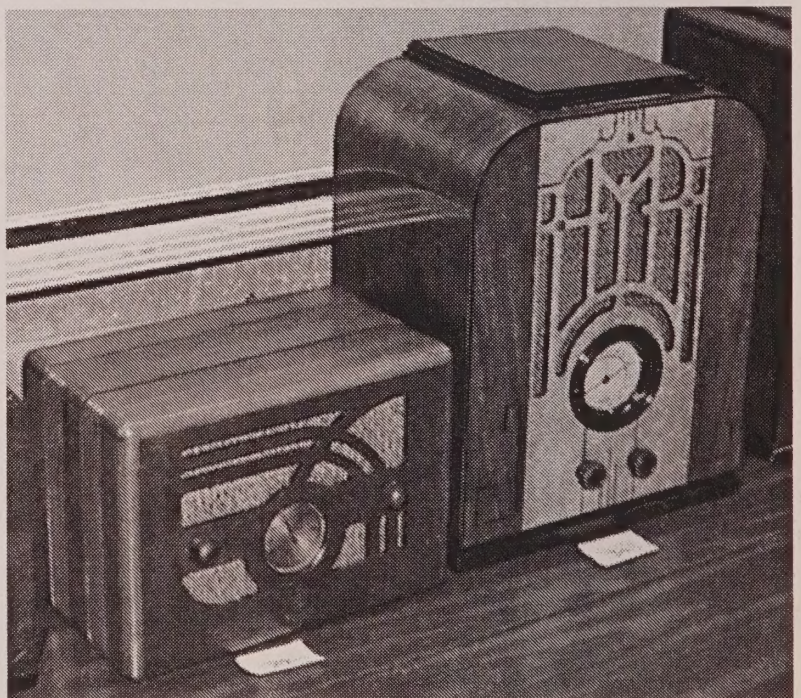
Right: Clyde Watson brought this beautiful Midwest receiver and provided a nice display of materials featuring his Scott radios and Zenith Stratosphere. Although many of Clyde's radios would have fit the theme, Clyde can be excused for not bringing them due to their massive size and weight. He would have needed a moving van and crew.

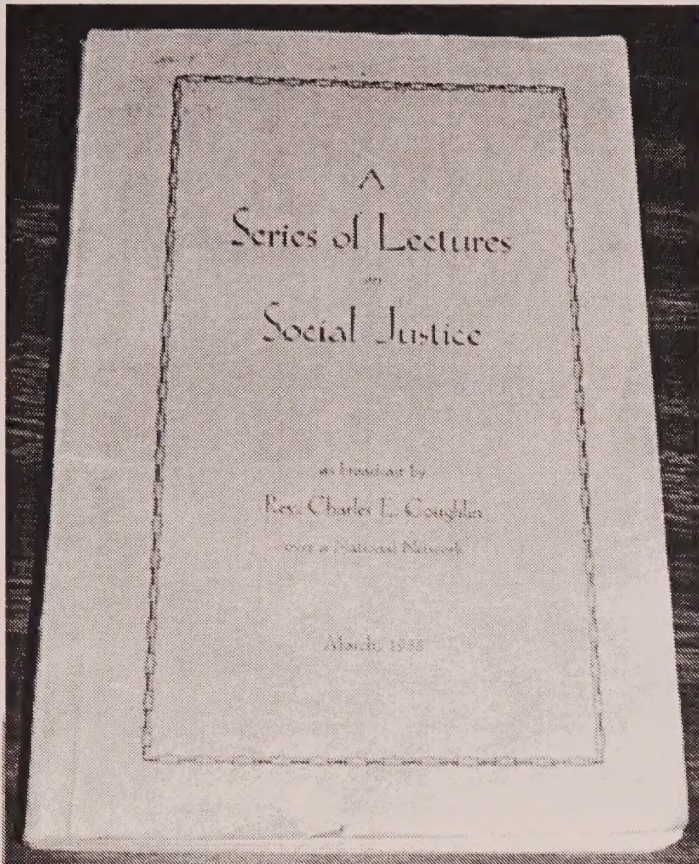




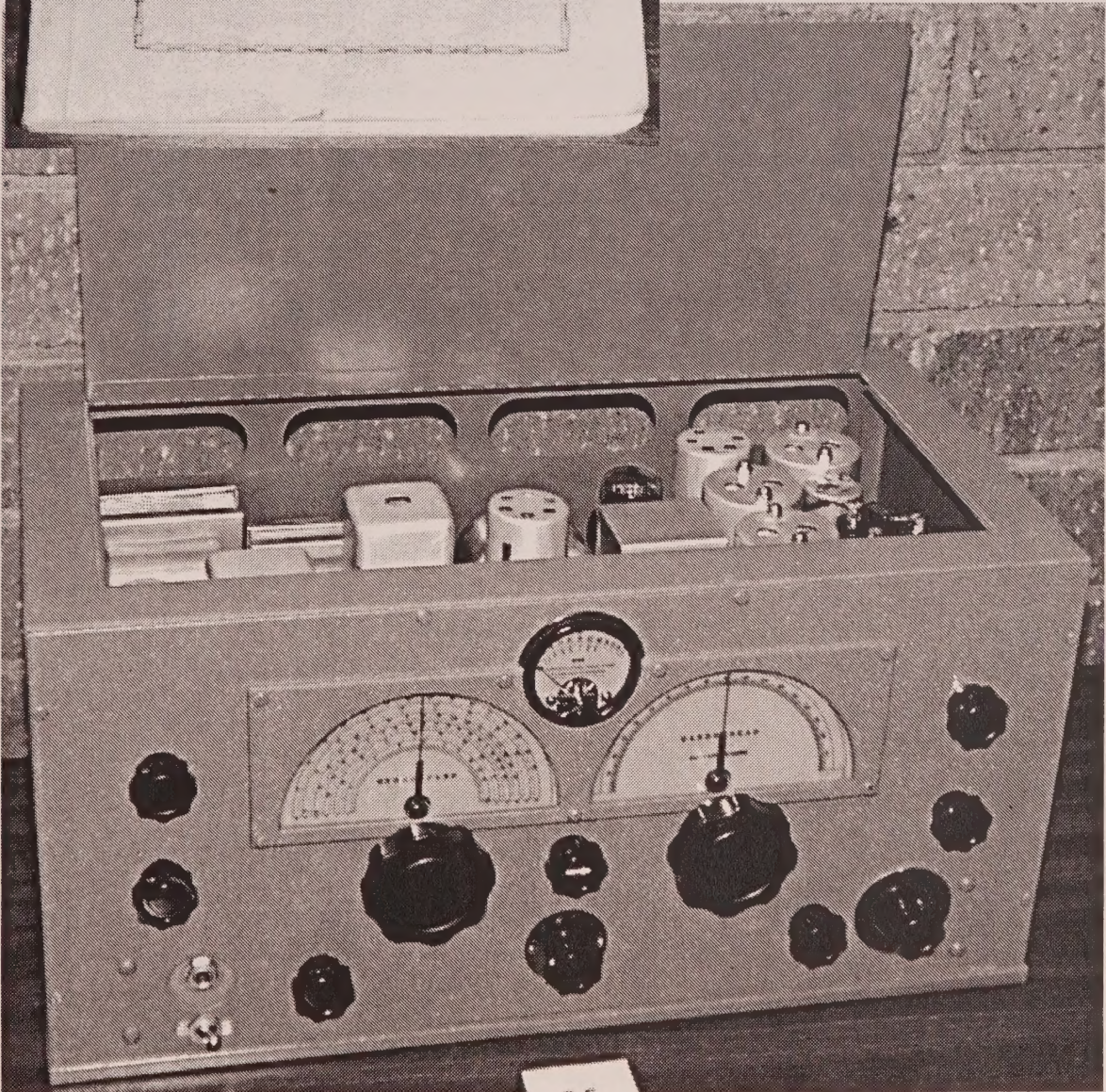
The silhouette of a woman dancing on the grille of this small cathedral makes it another unique member of Mark Toppo's collection.

To the right, Steve Smith brought a number of stylish, small sets, including this one with a birdseye maple front panel.





Left: a 1935 book of radio lectures by the Rev. Charles Coughlin, a Detroit priest who mastered the medium of radio to spread a message of intolerance.
Below, an RME-69, beautifully restored by Les Rayner, now in the collection of Bill Lettow.





Sporting our newly refurbished banner, the booth was manned in this picture by Dave and Con (the only one smart enough to wear a hat.)

March Swap Meet Continued from page 20

The club has been gaining new members from Tucson and southern Arizona at a steady pace and it looked like quite a few of them showed up.

Club members really helped out by buying \$2,137 worth of radios, tubes and related items from the estate of John Sabo on sale at this event. We disposed of nearly everything from the estate in this one sale. The remaining small items will be sold at our Fall 1999 swap meet.

HAMFEST DISPLAY SCOTTSDALE COMMUNITY COLLEGE

We had a booth set up at the March 13th Hamfest at Scottsdale Commu-

nity College. Organized by Con Morton, and with special help from Dave Lambert, Dennis Craft, Carl Roberts, Clyde Watson and others, antique radios were on display for the huge crowd present. Many people learned that antique radios exist and so does a club for those interested in pursuing the matter.

Our crew was up early (no civilized 8am start time for the Hamfest!) Dave brought a gas generator so that an A-K Breadboard could be made to play. Possessing saintly patience and indefatigable feet, the antique radiomen answered questions and shmoozed with the crowd for about 6 hours. We raise our bottles of sunscreen in salute and gratitude to all involved!



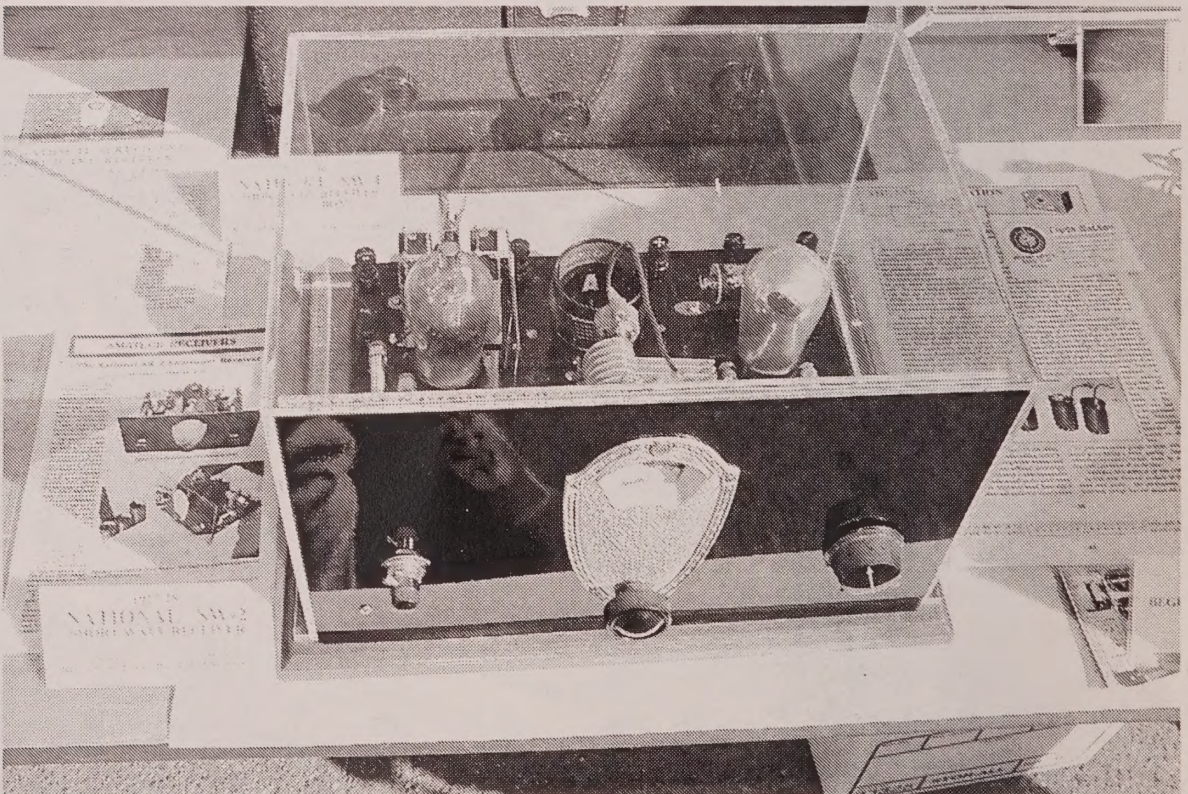
"Is that thing a radio?" This question was asked many times as people marvelled at the A-K breadboard playing old music and being powered by a thundering gas generator.



"No, they're not for sale" was the patient answer to another common question.



This amazing display of early National "Thrill Box" radios, parts and literature, was provided by Clyde Watson. Each of these immaculate sets is among the most highly prized by National and communications set collectors. It was a thrill to see them all in one place at one time.



Clyde's National SW-2 looking like jewelry under its plexiglass cover.

Editor's note: we ran this story in the last issue with a major mistake in translation from the author's original. Since the mistake was so pervasive, we are running the story again, corrected for editor's errors.

Most good analog high-frequency communications receivers have two rf tracking adjustments for the rf, mixer and local oscillator circuits of each band - a capacity trimmer for the high end and an inductance adjustment at the low end.

Sometimes when the local oscillator (LO) adjustments are made at or near the band edges, the frequency calibration accuracy is found to be poor in the middle of the band. There are three possible causes for this:

1. Poor calibration accuracy dur-

ing manufacture (too much dial parallax, etc.)

2. Drift of the LO series or shunt padder.

3. LO is on the wrong side of the signal.

The first is not too common and the second is hard to detect without an accurate capacity bridge to measure the suspected unit and prepare a replacement if required - most of them are not standard values. But the third is relatively easy to deal with.

Measure the LO frequency with a counter or a heterodyne frequency meter such as an LM or BC-221 to make sure the LO is on the correct side of the signal (whose frequency must be known). If it is on the wrong side (such as below when it should be above - the usual case), then reduce the LO coil inductance until the signal is heard again. Do this at the bottom end of the tuning range, and then repeat the whole rf alignment procedure.

The author ran into this on a recently acquired BC-1004.

Calibration was accurate at 10 and 20 MHz, but way off at 15 MHz, due to LO being below the signal instead of above.

About an hour of sweating and fiddling sufficed to cure the problem.

Notes from the Workbench
by Jbel Ekstrom W1UNX

Notes from the Workbench will be a regular feature in the AARC News. It is a forum for servicing ideas, restoration tips and answers to your questions. Send material to AARC Editor, 2025 E. LaJolla Dr., Tempe, 85282.

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WANTED: Edison Ticker Tape machines or the square ones made by ACE Electric. Also speaker horn for model E - Edison standard phonograph. Also Ballast tubes D-110 or D-105. CECIL HOOPER, 242-4284.

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WANTED: "Tom Thumb" radios made by the Automatic Radio Company. All models. GEORGE A. FATHAUER, 116 N. Roosevelt, Suite 121, Chandler, AZ, 85226, 961-5176.

WANTED: Top quality signal generator, in working condition with manual. RICK MOUNTJOY, 926-8174.

HI! I'm looking for a schematic for a GE X216A table top wood cabinet radio, possibly a 1948-49 model. Also need a ballast tube (RR7013). This radio has "Made in the USA" on the back, but also Spanish writing below. Call 439-5955, if not home leave a message. Thanks, STEVEN STRAPACH.

WANTED: Radio Premiums. Rings, paper, badges, etc. from Tom Mix,



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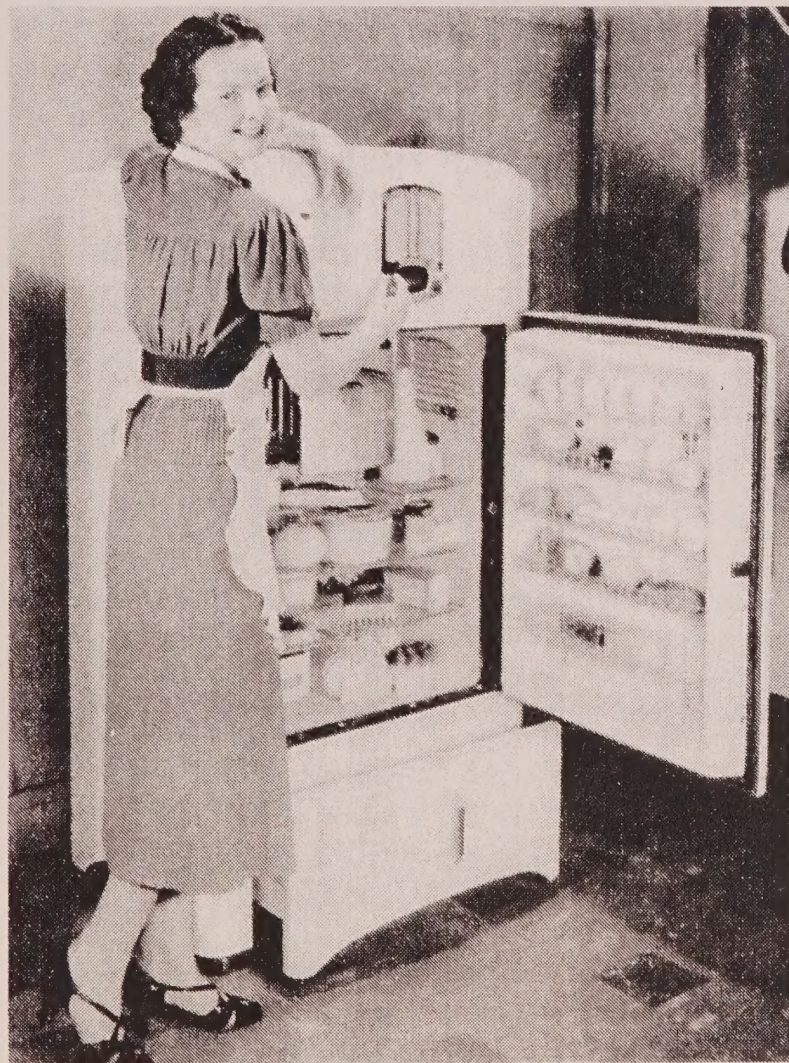


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Vol.#, No. / Issue Date / Availability

I, 1	May 1983	0	VII, 3	Fall 1990	Many
I, 2	Aug 1983	0	VII, 4	Winter 1990	3
I, 3	Nov 1983	0	VIII, 1	Spring 1991	Many
I, 4	Feb 1984	0	VIII, 2	Summer 1991	Many
II, 1	May 1984	1	VIII, 3	Fall 1991	Many
II, 2	Aug 1984	Many	VIII, 4	Winter 1991	6
II, 3	Mar 1985	Many	IX, 1	Spring 1992	Many
II, 4	Jun 1985	0	IX, 2	Summer 1992	Many
III, 1	Apr 1986	0	IX, 3	Fall 1992	4
III, 2	Jul 1986	0	X, 4	Winter 1992	2
III, 3	Oct 1986	0	X, 1	Spring 1993	4
III, 4	Nov 1986	0	X, 2	Summer 1993	5
IV, 1	Jan 1987	Many	X, 3	Fall 1993	4
IV, 2	Feb 1987	Many	X, 4	Winter 1993	0
IV, 3	Mar 1987	Many	XI, 1	Spring 1994	0
IV, 4	Apr 1987	0	XI, 2	Summer 1994	0
IV, 5	May 1987	0	XI, 3	Fall 1994	0
V, 1	Fall 1987	Many	XI, 4	Winter 1994	0
V, 2	Winter 1988	6	XII, 1	Spring 1995	0
V, 3	Spring 1988	2	XII, 2	Summer 1995	0
V, 4	Summer 1988	Many	XII, 3	Fall 1995	0
V, 5	Fall 1988	Many	XII, 4	Winter 1995	0
V, 6	Winter 1988	Many	XIII, 1	Spring 1996	0
VI, 1	Spring 1989	Many	XIII, 2	Summer 1996	0
VI, 2	Summer 1989	6	XIII, 3	Fall 1996	0
VI, 3	Fall 1989	3	XIII, 4	Winter 1996	0
VI, 4	Winter 1989	Many	XIV, 1	Spring 1997	Many
VII, 1	Spring 1990	Many	XIV, 2	Summer 1997	0
VII, 2	Summer 1990	Many	XIV, 3	Fall 1997	Many
			XIV, 4	Winter 1997	0
			XV, 1	Spring 1998	Many

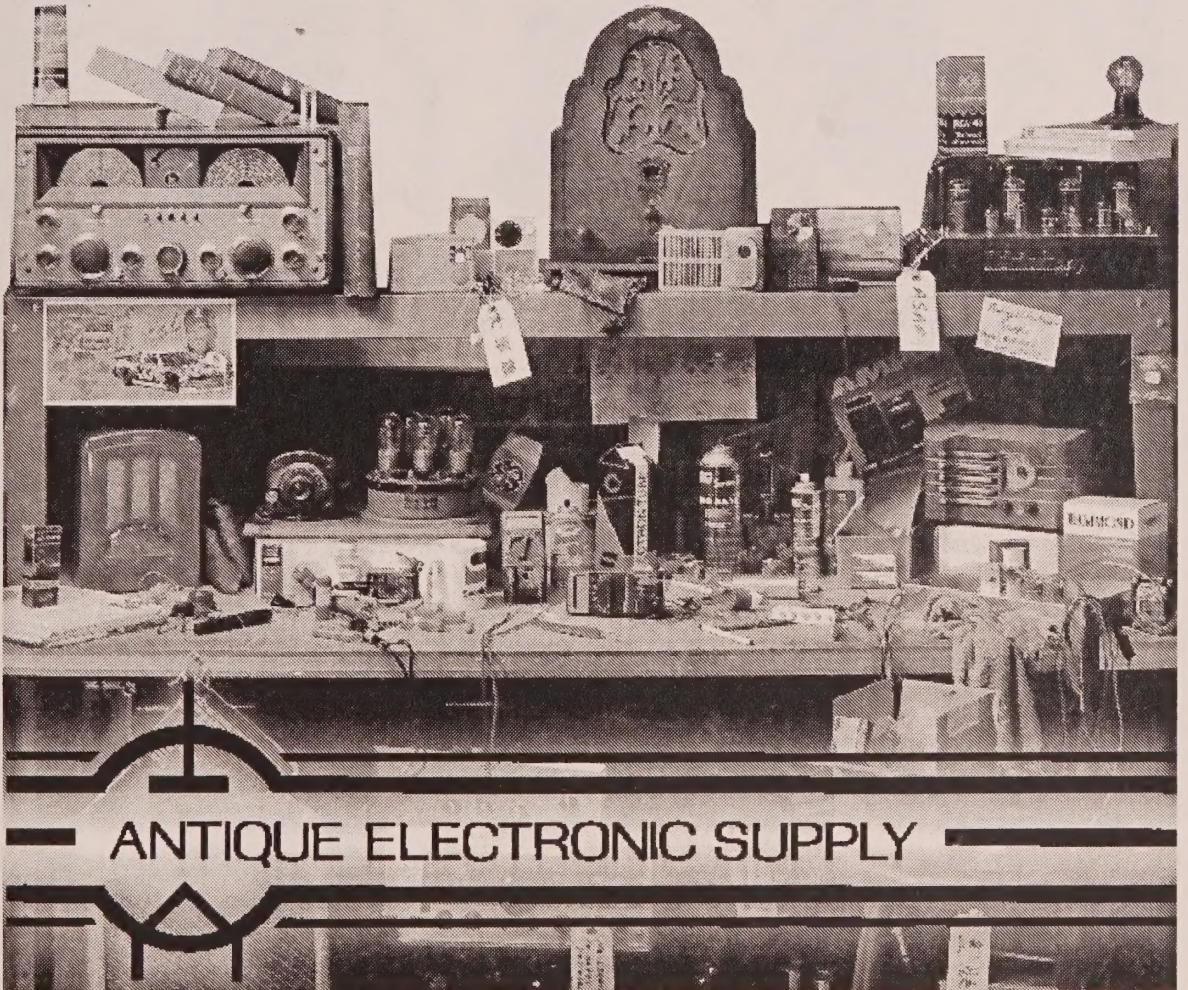
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